

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1, 3-6 and 8-12 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

Entry of Amendment

Applicants submit that the entry of the present amendment is appropriate since it is being accompanied by a Request for Continued Examination. Applicants also note that amendments have previously been filed on April 16, 2007 and May 3, 2007.

New Claims

Applicants have added new claims 11 and 12 to recite the guide rods which are parallel to the top rod in the tuning mechanisms. The guide rods are shown as reference numeral 22 in Fig. 2. Applicants have also corrected a minor error in claims 4 and 9 where the description of the two springs are referenced to the guide rod rather than the top rod. Since the springs are opposite both of these rods either is correct. However since there is no antecedent basis for the guide rod in claims 4 and 9 that has been replaced by the top rod. The guide rods have now been separately described in claims 11 and 12.

Rejection under 35 U.S.C. § 103

Claims 1, 3-6 and 8-10 stand rejected under 35 USC 103 as being obvious over Wyngaert et al. (US Patent 6,554,398) in view of Murikami et al. (US Patent 6,896,357) and Althausen et al. (IBM Technical Disclosure Bulletin). This rejection is respectfully traversed.

The Examiner states that the Wyngaert et al. reference shows a compound inkjet printhead printer with a compound printhead module including at least two printheads, an ink detecting module for aligning the nozzles and printheads, actuators and sensors to check the operation and alignment of the nozzles, and the printheads being mounted on a tuning mechanism to adjust the relative distance. The Examiner admits that Wyngaert et al. do not teach ink droplets of the same color and at least printheads providing sizes of ink droplets.

The Examiner relies on Murikami et al. to teach ink droplets of the same color to provide high gradation and high quality images.

The Examiner relies on Althausen et al. to teach a compound printhead module including at least two printheads to provide ink droplets with different sizes. The Examiner feels it would have been obvious to one of ordinary skill in the art to utilize ink droplets of the same color and at least two printheads to provide ink droplets of different sizes so that the compound printhead module simultaneously provides ink droplets of at least two sizes in a print stroke to perform multi-gradation pixels with a reduced number of print strokes and an increasing print speed.

Applicants submit that the presently claimed invention is not obvious over any of these references or their combination.

The Wyngaert et al. reference shows an inkjet printer having printheads 104 and 104a. The distance between the printheads can be adjusted using actuator 106. However, it is noted that according to column 7, lines 57 and following, the misalignment of the printheads is determined by using a CCD camera or other optical means to read a printed test image and/or the edges of the images. Thus, in order to determine the position of the printheads, it is necessary to print a test image and then determine if the printed image is out of alignment. This differs from the present invention, where the ink detecting module directly determines the operation and relative distance between the printheads before the ink droplet ejection. Clearly, if it is necessary to print a test image for sensing the position of the printheads this cannot be done “before” the ink droplet ejection. Thus, it is clear that the Wyngaert et al. reference does not teach this feature. Furthermore, this concept is emphasized by the amendment to claim 1 to indicate that the determination of the relative distance is directly determined. Thus, the present invention does not need to refer to the printed test image in order to determine this relative distance. Accordingly, Applicants submit that the Wyngaert et al. reference does not teach these features.

Likewise, the Murikami et al. and Althausen et al. references do not teach this feature either. Accordingly, Applicants submit that even if the three references are combined they still do not teach this feature of the claimed invention. Accordingly, claim 1 is considered to be allowable.

Likewise, independent claim 6 has also been amended to include these same limitations. Accordingly, claim 6 is likewise allowable for the same reasons recited above in regard to claim 1.

Applicants have previously made this same argument in the amendment of April 16, 2007. It is noted that the Examiner has not responded to this argument in the recent final rejection. Applicants are again submitting this argument since it appears to eliminate the rejection. If the Examiner maintains this rejection, she is requested to point out how the reference shows the determination of the operation and relative distance between the print heads of the compound print head module before ink droplet ejection. Applicants agree that the Wyngaert et al. reference performs an adjustment, however this is only after the ink droplet ejection. Applicants submit that the Examiner cannot support this rejection that the claims must be allowed.

Claims 3-5 and 8-12 depend from these allowable independent claims and as such are also considered to be allowable. In addition, each of these claims recite other features that make them additionally allowable. In particular, it is noted that claims 4 and 9 describe the details of the tuning mechanism. The Examiner has indicated that this is also shown in Wyngaert et al.. However, Applicants submit the arrangement of the parts is different than in the reference. Thus, the Examiner has identified the springs (109) as pushing against the side opposite to the guide rod. It appears that springs (109) push the sensor downwardly as shown in Fig. 4 while the top rod and guide rods would cause it to move in a perpendicular direction along the z-axis. Accordingly, Applicants submit that this description is not found in the reference. Furthermore, Applicants have added new claims 11 and 12 to separately describe the guide rods. Applicants submit that these claims are also allowable.

Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejection and allowance of all the claims are respectfully requested.

Application No. 10/725,416
Amendment dated October 31, 2007
After Final Office Action of July 31, 2007

Docket No.: 3313-1074P

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse Reg. No. 27,295 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: October 31, 2007

Respectfully submitted,

By 

Joe McKinney Muncy

Registration No.: 32,334

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Road

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant